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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|-------------------|
| 10/815,789 | 04/02/2004 | Manabu Shiozaki | 50212-587 | 9928 |
| 20277 | 7590 | 11/14/2005 | EXAMINER | |
| MCDERMOTT WILL & EMERY LLP 600 13TH STREET, N.W. WASHINGTON, DC 20005-3096 | | | | LAVARIAS, ARNEL C |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2872 | |

DATE MAILED: 11/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/815,789 | SHIOZAKI ET AL. | |
| | Examiner | Art Unit | |
| | Arnel C. Lavarias | 2872 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 8/13/04, 4/2/04.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-10 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-10 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 02 April 2004 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>8/13/04</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152). |
| | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.
2. Acknowledgment is made of applicant's claim for domestic priority under 35 U.S.C. 119(e), however, a specific reference to the prior-filed application in compliance with 37 CFR 1.78(a) is not included in the first sentence(s) of the specification following the title or in an application data sheet.
3. If Applicant desires to claim the benefit of a prior-filed application under 35 U.S.C. 119(e), a specific reference to the prior-filed application in compliance with 37 CFR 1.78(a) must be included in the first sentence(s) of the specification following the title or in an application data sheet. For benefit claims under 35 U.S.C. 120, 121 or 365(c), the reference must include the relationship (i.e., continuation, divisional, or continuation-in-part) of the applications.

If the instant application is a utility or plant application filed under 35 U.S.C. 111(a) on or after November 29, 2000, the specific reference must be submitted during the pendency of the application and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior application. If the application is a utility or plant application which entered the national stage from an international application filed on or after November 29, 2000, after compliance with 35 U.S.C. 371, the specific reference must be submitted during the pendency of the

application and within the later of four months from the date on which the national stage commenced under 35 U.S.C. 371(b) or (f) or sixteen months from the filing date of the prior application. See 37 CFR 1.78(a)(2)(ii) and (a)(5)(ii). This time period is not extendable and a failure to submit the reference required by 35 U.S.C. 119(e) and/or 120, where applicable, within this time period is considered a waiver of any benefit of such prior application(s) under 35 U.S.C. 119(e), 120, 121 and 365(c). A benefit claim filed after the required time period may be accepted if it is accompanied by a grantable petition to accept an unintentionally delayed benefit claim under 35 U.S.C. 119(e), 120, 121 and 365(c). The petition must be accompanied by (1) the reference required by 35 U.S.C. 120 or 119(e) and 37 CFR 1.78(a)(2) or (a)(5) to the prior application (unless previously submitted), (2) a surcharge under 37 CFR 1.17(t), and (3) a statement that the entire delay between the date the claim was due under 37 CFR 1.78(a)(2) or (a)(5) and the date the claim was filed was unintentional. The Director may require additional information where there is a question whether the delay was unintentional. The petition should be addressed to: Mail Stop Petition, Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

If the reference to the prior application was previously submitted within the time period set forth in 37 CFR 1.78(a), but not in the first sentence(s) of the specification or an application data sheet (ADS) as required by 37 CFR 1.78(a) (e.g., if the reference was submitted in an oath or declaration or the application transmittal letter), and the information concerning the benefit claim was recognized by the Office as shown by its inclusion on the first filing receipt, the petition under 37 CFR 1.78(a) and the surcharge

under 37 CFR 1.17(t) are not required. Applicant is still required to submit the reference in compliance with 37 CFR 1.78(a) by filing an amendment to the first sentence(s) of the specification or an ADS. See MPEP § 201.11.

Drawings

4. The drawings were received on 4/2/04. These drawings are acceptable.

Specification

5. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of *50 to 150 words*. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. *The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided.* The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. *It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.*

6. The abstract of the disclosure is objected to because of the following informalities:

Abstract is too long.

Abstract, line 2- 'The present invention relates a' should read 'A'.

Abstract, line 6- 'comprises' should read 'includes'

Correction is required. See MPEP § 608.01(b).

7. The attempt to incorporate subject matter into this application by reference to the priority provisional application (See Paragraph 0001 of Applicants' disclosure) is

ineffective because the priority provisional application is not clearly identified as required by 37 CFR 1.57(b)(2).

8. The incorporation by reference will not be effective until correction is made to comply with 37 CFR 1.57(b), (c), or (d). If the incorporated material is relied upon to meet any outstanding objection, rejection, or other requirement imposed by the Office, the correction must be made within any time period set by the Office for responding to the objection, rejection, or other requirement for the incorporation to be effective. Compliance will not be held in abeyance with respect to responding to the objection, rejection, or other requirement for the incorporation to be effective. In no case may the correction be made later than the close of prosecution as defined in 37 CFR 1.114(b), or abandonment of the application, whichever occurs earlier.

Any correction inserting material by amendment that was previously incorporated by reference must be accompanied by a statement that the material being inserted is the material incorporated by reference and the amendment contains no new matter. 37 CFR 1.57(f).

9. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification. Examples of such errors are provided *infra*.

10. The disclosure is objected to because of the following informalities:

Paragraph 0004, line 6- delete 'be'

Paragraph 0050, line 13- ‘causes’ should read ‘cause’

Paragraph 0057, line 17- insert ‘light’ after ‘incident’

Paragraph 0066, line 25- insert ‘at’ after ‘arriving’.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 1-2, 4-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Holm et al. (U.S. Patent No. 6762880).

Holm et al. discloses a diffraction grating element (See for example Figures 8-10; col. 12, lines 8-25), comprising: a first medium having a refractive index of n_1 (silicon nitride); a second medium (quartz) arranged so as to be in contact with said first medium, said second medium having a refractive index of n_2 lower than that of said first medium; and a diffraction grating (See 1004 in Figure 10) provided at the interface between said first medium and said second medium, wherein one of said first medium and said second medium is a solid, and the other thereof is a solid or a liquid, and wherein, taking the period of said diffraction grating to be Λ , the height of said diffraction grating to be H , the duty ratio of the width of said first medium with respect to the period Λ in said

diffraction grating to be f , and the normalized height expressed by $\left(\frac{n_1}{n_2} - 1\right)\frac{H}{\Lambda}$ to be

H_{norm} , in a two-dimensional plane based on coordinate values (H_{norm} , f), the normalized height H_{norm} and the duty ratio f lie within a region enclosed by linking in sequence, by means of line segments, the point (0.50, 0.32), the point (0.50, 0.75), the point (2.00, 0.90), the point (4.00, 0.90), the point (2.20, 0.76), the point (0.75, 0.32), and the point (0.50, 0.32), or within a region enclosed by linking in sequence, by means of line segments, the point (2.25, 0.20), the point (2.25, 0.44), the point (2.75, 0.44), the point (2.75, 0.20), and the point (2.25, 0.20) (In the instant case, $H_{\text{norm}} = 0.64$, and $f = 0.51$; See col. 12, lines 16-25). Holm et al. additionally discloses the period Λ of the diffraction grating element being 1.46 μm or less (See col. 12, lines 16-25); the refractive index ratio $\left(\frac{n_1}{n_2}\right)$ between the first medium and the second medium is 1.25 or more but 1.6 or less (See col. 12, lines 16-25, wherein the refractive index of quartz is approximately 1.5); the incident angle of the diffraction angle of the light in the second medium of the diffraction grating is 25° or more by 35° or less (See col. 12, lines 16-25); and wherein a Bragg condition of the diffraction grating in the diffraction grating element is satisfied (See col. 7, lines 41-65).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Holm et al.

Holm et al. discloses the invention as set forth above in Claim 1, except for, in the two-dimensional plane based on coordinate values (H_{norm} , f), the normalized height H_{norm} and the duty ratio f lie within a region enclosed by linking in sequence, by means of line segments, the point (0.80, 0.62), the point (0.80, 0.65), the point (1.00, 0.75), the point (1.60, 0.82), the point (1.75, 0.82), the point (0.96, 0.60), and the point (0.80, 0.62).

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have, in the two-dimensional plane based on coordinate values (H_{norm} , f), the normalized height H_{norm} and the duty ratio f lie within a region enclosed by linking in sequence, by means of line segments, the point (0.80, 0.62), the point (0.80, 0.65), the point (1.00, 0.75), the point (1.60, 0.82), the point (1.75, 0.82), the point (0.96, 0.60), and the point (0.80, 0.62), since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. One would have been motivated to have, in the two-dimensional plane based on coordinate values (H_{norm} , f), the normalized height H_{norm} and the duty ratio f lie within a region enclosed by linking in sequence, by means of line segments, the point (0.80, 0.62), the point (0.80, 0.65), the point (1.00, 0.75), the point (1.60, 0.82), the point (1.75, 0.82), the point (0.96, 0.60), and the point (0.80, 0.62), for the purpose of maximizing the diffraction efficiency for particular diffraction order(s)

and/or polarization(s) at the particular operational wavelength of light. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235.

15. Claims 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holm et al. in view of Fabiny et al. (U.S. Patent No. 6747799).

Holm et al. discloses the invention as set forth above in Claim 1, except for an optical module or optical communications system including the diffraction grating element for multiplexing or demultiplexing signal light. However, Fabiny et al. teaches a conventional diffraction grating (See for example Figures 2, 5) which is structurally similar to the diffraction grating of Holm et al., wherein the diffraction grating may be utilized in an optical module in an optical communications system for multiplexing and demultiplexing an incident optical signal. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have an optical module or optical communications system include the diffraction grating element of Holm et al., for multiplexing or demultiplexing signal light, as taught by Fabiny et al., to take advantage of the increased diffraction efficiency provided by the diffraction element, thus reducing optical signal losses during multiplexing and demultiplexing operations.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavaras whose telephone number is 571-272-2315. The examiner can normally be reached on M-F 9:30 AM - 6 PM EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Arnel C. Lavarias
Patent Examiner
Group Art Unit 2872
11/10/05